

# FEDERAL GRANTS DURING THE EIGHTIES

by  
Ronnie Lowenstein

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**ABSTRACT**

Federal grants policy changed significantly during the eighties. Grants to states and localities decreased as a share of GDP, the first sustained decline in aid since the forties. Restrictions on the use of federal funds were eased with the conversion of categorical matching aid programs into unconditional block grants. At the same time, aid to individuals rose at the expense of other major grants categories. Taken together, these changes in federal grants tended to decrease state and local government investment in physical and human capital. I estimate that the decline in federal grants for physical capital investment curbed average annual growth of state and local capital (as a share of GDP) by roughly 0.5 percentage points during the eighties, and slowed the growth of output by as much as 0.7 percentage points over the decade. Similarly, cuts in grants for job training decreased GDP growth by as much as 0.4 percentage points over the same period.

## INTRODUCTION

In his first Inaugural Address, President Reagan called for decreasing the size of the government sector and transferring much of the responsibility for public spending to the states<sup>1</sup>:

"It is time to check and reverse the growth of government which shows signs of having grown beyond the consent of the governed. It is my intention to curb the size and influence of the Federal establishment and to demand recognition of the distinction between the powers granted to the federal government and those reserved to the states ... In the days ahead I will propose removing the roadblocks that have slowed our economy and reduced productivity. Steps will be taken aimed at restoring the balance between the various levels of government." [January 20, 1981]

Translating the Inaugural Message into legislative proposals, the Reagan Administration called for significant changes in both the level and the structure of federal grants to state and local governments. The emphasis on decreasing the size of the federal sector -- while simultaneously increasing defense spending and maintaining the social "safety net" -- put much of the burden of downsizing onto other areas of the budget such as grants-in-aid. At the same time, the devolution of greater control over spending to lower levels of government entailed changing the structure of grants to ease restrictions on the use of federal funds. This combination of cuts and changes in the structure of aid would come to characterize federal grants policy during the eighties; although easing restrictions on the use of grants had been a key part of Nixon's "New Federalism" and

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<sup>1</sup> These twin goals were viewed as complementary, as competition among states for population and industry was expected to decrease government spending and to encourage the efficient provision of government services.

cutbacks in aid actually began during the latter half of the Carter Administration, it was only under the Reagan Administration that easing restrictions were coupled with decreasing aid. This paper examines the significant changes in the level, composition, and structure of federal grants during the eighties, and the impact of these changes on capital investment and long-term growth.

As we will show, changes in federal grants policy during the eighties may have worked against the Reagan Administration's goal of promoting growth, because much of the decline in federal aid occurred in programs to fund state and local investment in physical and human capital. Grants for physical capital investment fell from an average of 0.77 percent of GDP during the seventies to an average of 0.59 percent of GDP between 1981 and 1990. Over the same period, grants for job training and education fell from 0.55 to 0.29 percent of GDP.

Quantifying the impact of the decline in grants for physical and human capital on economic growth is problematic, however. The extent to which cuts in grants lead to cuts in state and local government spending is open to question. The absence of markets requires the researcher to value the output of states and localities on the basis of input costs. Government spending often contains elements of both investment and current consumption, and even where investment does occur, its impact on economic growth may not be felt for decades. Finally, to the extent the decline in federal grants did lead to lower government

spending, real interest rates -- and thus private investment -- may have been affected.

Keeping these difficulties in mind, the decline in federal grants for investment in physical capital is estimated to have curbed average annual growth of state and local government capital (as a share of GDP) by roughly 0.5 percentage points during the eighties, and to have slowed the growth of output by as much as 0.7 percentage points over the decade. Similarly, cuts in grants for job training and employment programs decreased GDP growth as much as 0.4 percentage points over the same period, while declines in federal aid to education will likely slow growth in the very long run.

The paper is divided into three sections. Section I begins with a brief discussion of the rationale for grants to states and localities, followed by an overview of changes in the level, composition, and structure of federal aid during the eighties. Sections II and III assess the economic impact of the declines in grants for physical and human capital.

**SECTION I: AN OVERVIEW OF FEDERAL GRANTS DURING THE EIGHTIES**  
**WHY FEDERAL GRANTS?**

The rationale for federal grants differs by type of grant. For our present purpose, grants can be divided into two basic forms: categorical and unconditional. Categorical grants are funds for narrowly defined programs, with recipient governments often required to match a portion of the federal contribution.<sup>2</sup> In contrast, unconditional grants leave recipient governments with total or near-total discretion over the use of federal funds. General Revenue Sharing (GRS) is the prime example of a no-strings-attached unconditional grant, while block grants -- which allow states and localities considerable control over spending -- fall into the latter category.

Categorical matching grants are primarily used to increase spending on specific categories of publicly-provided goods and services. The rationale for categorical matching grants is generally based on "externalities" and "merit goods" arguments. Where government spending yields benefits which spill over to many jurisdictions, individual states and localities are likely to under-invest. For example, in the absence of grants, a locality may not spend enough on the construction of an interstate highway because so many of the benefits are enjoyed by

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<sup>2</sup> Not all federal categorical grants require matching payments from states and localities. The Women, Infants and Children (WIC) program is one example of a non-matching categorical grant.

taxpayers of other jurisdictions. Categorical grants which provide federal funds for specific construction projects, along with matching provisions which encourage the local electorate to maintain or even increase construction spending out of their own funds, address this market failure. An alternative justification for using categorical matching grants to increase spending occurs when the federal government views a locally-provided public good or service as merit worthy.

Unlike categorical matching grants, unconditional grants do not interfere with local choice because recipient governments retain control over the use of federal funds. Instead, unconditional grants are generally used to equalize fiscal capacity -- the ability to finance a given level of public services -- across jurisdictions, while preserving the efficiencies associated with keeping spending decisions at lower levels of government.<sup>3</sup> In effect, unconditional grants substitute federal taxes for revenues raised by states and localities. The advantages associated with central taxation provide an additional rationale for the use of unconditional grants. Unlike state and local taxes, federal taxes do not distort domestic location decisions. Moreover, the use of progressive taxation is far more effective at the federal level than at lower levels of government.

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<sup>3</sup> In the absence of spillovers and economies of scale, decentralized provision of public services is the most efficient means of meeting diverse local demands. [Oates/ Political Economy of Fiscal Federalism]

## A (BRIEF) HISTORY OF FEDERAL GRANTS BEFORE 1980

Grants to state and local governments increased sharply during the sixties, driven by the Great Society programs initiated under the Johnson Administration (Chart 1 and Table 1). Federal grants rose from \$7.1 billion in 1961 to \$24.1 billion in 1970, an increase of one percent of GDP over the decade. As aid increased, the functional distribution of grants widened. During the fifties, highways and welfare accounted for nearly three-quarters of all federal grant dollars. The new grant programs of the sixties provided federal funds for a broad array of traditional state and local responsibilities -- health, education, training, urban renewal and community development. This broader functional distribution shifted the composition of federal grants away from investment in physical capital and toward aid to individuals (Chart 2). In a break with past practice, much of the new aid was channeled directly to localities, and particularly to urban areas.

In addition to changes in levels and distribution, the structure of federal grants became more restrictive during the sixties. The number of narrowly-defined categorical grant programs swelled from 160 in 1960 to over 400 in 1970. To ensure that new funds were used to promote the Great Society's goals of improving the quality of life, particularly for the disadvantaged, many new categorical grants contained federal legislative and regulatory mandates which left recipients little discretion over grant-aided spending. Observers criticized the



complexity of the categorical grant programs; rather than establishing federal control over broad program objectives, the profusion of program requirements enmeshed administrators in details that too often frustrated local accomplishment while swelling administrative costs. Moreover, the complexity of program requirements -- coupled with the sheer number of programs -- tended to reward jurisdictions most skilled in "grantsmanship" and not to those most in need. [Pressman and Wildavsky, Schultze]

Federal aid continued to increase strongly through most of the seventies, rising from 2.6 percent of GDP in 1971 to reach a peak of 3.5 percent of GDP in 1978. Grants for Medicaid, social services, job training and urban renewal surged, continuing the shift toward payments to individuals and "other" (non-physical capital) grants. An additional factor buoying the growth of federal aid was the 1976 enactment of a short-term, fiscal stimulus program, including unconditional aid as well as funds for local public works and public service employment.

However, the more significant change in federal grants policy during the seventies occurred in the structure -- as opposed to the level or composition -- of aid. Partly in response to the criticism of categorical grants, restrictions on the use of federal aid eased. Under the Nixon Administration's New Federalism, the federal government continued to aid states and localities, but devolved much of the responsibility for policy-making and administration to the subnational level.

The biggest change occurred with the enactment of

General Revenue Sharing (GRS) in 1972. GRS provided unconditional, nonmatching aid to states, which were in turn required to pass two-thirds of the aid through to general-purpose local governments. Funds were distributed to states primarily on the basis of tax effort, with poverty, revenue-raising ability, and (to a lesser extent) urbanization also factors. [Office of State and Local Finance, Department of the Treasury]

In addition to GRS, the early seventies saw the creation of several block grants providing broad-based aid to local governments, most notably the CETA program (merging 11 categorical employment training programs into a single block grant) and the Community Development Block Grant (merging 6 categorical programs, the largest of which were urban renewal and model cities). By 1975, unconditional aid -- both revenue sharing and block grants -- accounted for one-quarter of all federal grant dollars. Moreover, localities, particularly urban areas, were the chief beneficiaries of the new unconditional aid. Between 1971 and 1978, federal revenues to local governments more than doubled as a share of GDP (Chart 3).

The growth of federal grants to states and localities slowed during the late seventies. Although aid continued to rise in nominal terms, grants as a share of output fell from 3.5 percent of GDP in 1978 to 3.3 percent of GDP in 1980. Most of the decline was attributable to the expiration of supplementary fiscal assistance at the close of 1978. In addition, state governments were excluded from the 1980 renewal of General

Revenue Sharing, in an effort to counteract inflationary pressures by slowing the growth of the federal deficit. [Palmer]

#### FEDERAL GRANTS DURING THE EIGHTIES

The eighties -- particularly the first half of the decade -- markedly changed federal grants policy. Grants decreased as a share of GDP, the first sustained decline in aid since the forties. The shift in the composition of grants accelerated, with grants to individuals rising at the expense of other major categories of aid. Over 60 categorical aid programs were consolidated and converted into broad block grants, giving state governments considerable control over the use of federal funds. Finally, reversing the trend of rising urban aid during the sixties and seventies, federal funds were redirected toward state governments and away from localities.

Federal grants as a share of GDP declined through most of the eighties, the only sustained decline in federal aid in the post-war era (refer back to Chart 1 and Table 1). Federal grants to states and localities, which had averaged 3.37 percent of GDP per year during the late seventies, fell to 2.62 percent of GDP during the early eighties and declined further to 2.34 percent of GDP during the latter half of the decade. Although the decline seems relatively small in terms of GDP, it is quite large when measured in dollars. If federal grants had remained the same share of GDP during the eighties as they had during the latter half of the seventies, aid would have been roughly \$50 billion

higher per year by decade end. Calculated in a similar fashion, the cumulative shortfall between 1981 and 1990 comes to over \$300 billion.

The composition of grants shifted markedly during the eighties as the level of aid as a share of GDP declined. Payments to individuals -- buoyed by continued growth in Medicaid -- was the only major category of grants to remain strong (Chart 2 and Table 1). Medicaid spending skyrocketed during the eighties due to broadened eligibility, the coverage of additional services, and rapid increases in the cost of medical care. By the end of the decade, payments to individuals accounted for nearly three-fifths of all federal grants, up from just two-fifths in 1981. By far the steepest cuts in grants occurred in job training and employment, which declined from an average of 0.33 percent of GDP during the late seventies to 0.08 percent of GDP during the eighties. Grants for physical capital also decreased as a share of GDP, led by sharp declines in grants for water and sewers.

The early eighties also saw significant changes in the structure of federal grants, with the consolidation of over 60 narrowly-defined categorical aid programs into 10 broad block grants. The block grants reassigned control over the affected programs to the states, with considerable discretion in grant money use. In addition, states were permitted to transfer funds among the block grants and from certain of the block grants to other federally-aided programs in the same fields. The

consolidation of categorical aid into less restrictive block grants affected many more programs than similar legislation during the early seventies. Moreover, unlike the seventies, the easing of grant conditionality during the eighties was accompanied by decreasing, rather than increasing, aid. In effect, state and local governments had traded increased program flexibility for reduced federal program spending. [Peterson]

Finally, for the decade as a whole, federal grants to state governments fared better than grants to localities (Chart 3). In part, this reflects the growth of entitlement programs (such as Medicaid and AFDC) for which federal funds are granted directly to the states, and the elimination of the local portion of General Revenue Sharing in 1986. In addition, however, many of the categorical grants created in the sixties and seventies -- which had broken precedent by directly aiding local governments -- were among the programs consolidated into state-administered block grants.

It is interesting to note that the primary economic rationale for devolving spending from the federal to lower levels of government is to increase efficiency; in theory, lower levels of government can more efficiently meet diverse local demands for public goods. During the eighties, however, control over the expenditure of grants shifted away from both the federal and local levels and towards the states. Although the shift in spending responsibility from the federal to the state level of government may have increased efficiency, the shift in spending

from localities to states could well have had the opposite effect. Moreover, there is little evidence that any increase in efficiency associated with the local provision of public goods would apply to a government unit as large as a state.

#### THE IMPACT ON STATE AND LOCAL SPENDING

In theory, both the decline in federal grants as a share of GDP and changes in the structure of federal aid decrease state and local government spending. A cut in grants effectively lowers a community's income, forcing it to provide fewer public services and/or to decrease private consumption by increasing taxes.<sup>4</sup> The consolidation of categorical aid into broad block grants, changes in the form of federal grants as opposed to changes in their level, also worked to decrease state and local government spending. Categorical matching grants generally stimulate more government spending than block grants of equal magnitude because -- in addition to the income effect common to both types of grants -- matching grants lower the price of the aided service relative to the price of private goods. [See accompanying box.] It follows that the early eighties' shift from categorical matching grants to block grants caused state and

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<sup>4</sup> Because federal grants are generally not distributed in proportion to a jurisdiction's contribution to federal receipts, the impact of a change in grants on state and local spending is commonly analyzed without regard to potential changes in federal taxation or borrowing.

local government spending to decline.<sup>5</sup>

Turn first to the empirical evidence. Unfortunately, functional categories of federal grants aren't necessarily defined the same way as functional categories of state and local government spending. Where the definitions do match, however, the data suggests that changes in federal grants between 1981 and 1990 were positively correlated with changes in state and local expenditures; states in which grants declined were generally states in which spending declined (and vice versa) (Table 2). Similarly, simple charts of grants and expenditures by function (as shares of GDP) also show that state and local spending declined with the eighties' declines in grants (Chart 4).

While the correlations and the charts are consistent with the hypothesis that declines in grants caused expenditures to decline, it is also possible causation ran in the opposite direction. Particularly in the short run, declines in state and local government own-source spending may well have led to decreases in categorical matching grants.<sup>6</sup> Moreover, factors

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<sup>5</sup> In practice, however, the impact of the shift in the form of grants on state and local government spending was diminished because, for many programs, federal categorical matching aid is only available up to some maximum level of outlays. For jurisdictions spending above the maximum, the switch from matching to block grants did not reduce the price of grant-aided services and thus did not remove an effective incentive to decrease outlays. [Rafuse, Gramlich]

<sup>6</sup> Although there is insufficient data to test whether changes in grants caused changes in spending during the eighties, causality tests for the longer period 1959:Q1 to 1991:Q4 suggest changes in grants (excluding Medicaid) Granger-caused changes in spending with lags of six or more quarters. Similar tests for

other than changes in grants may also have been responsible for the spending declines. For example, much of the decrease in both grants for education and spending on education as a share of GDP was associated with a third variable, declines in school enrollment.

Additional insight into the impact of changes in grants policy on state and local government spending can be gleaned from previous studies. Econometric work suggests that increases in federal grants have led to increases in spending by states and localities, although estimates of the size of the effect have varied widely. [Department of the Treasury, Office of State and Local Finance] The early empirical work implied that, in general, each new dollar of federal grants stimulates between \$1.30 and \$2.50 of state and local government spending (these results were dubbed the "flypaper effect", because money seemed to stick where it hit). However, more recent studies suggest that while federal grants do cause spending to increase, a significant portion of the aid is channeled into the private sector through decreases in taxes; each dollar of grants stimulates between \$0.20 and \$0.90 of state and local spending. It is also important to note that the econometric work has consistently shown categorical matching grants to have larger expenditure effects than block grants of equal magnitude. If these results hold for the eighties, it follows that both

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specific categories of spending suggest the expenditure impact of grants for education, training, and water and sewerage are particularly strong.



declines in aid and conversion of categorical matching to block grants tended to decrease public spending.

Like the econometric evidence, surveys of state and local governments suggest that spending declined in response to changes in federal grants policy during the early eighties. Among the states surveyed, the most active state in replacing federal aid (Oklahoma) restored only one-quarter of the loss of funds. In general, states and localities failed to replace the loss of federal funds for AFDC, low-income housing, job training and public service employment programs; the most important factors determining the degree of replacement funding were the incidence of a program's services, the strength of the program's constituency, and the degree to which the program was identified as a federal responsibility. [Nathan & Doolittle] In addition, the surveys provide indirect evidence that the conversion from matching to block grants also affected state and local government spending. In a sample of 18 states in which funding for social services was converted from categorical matching to block grants, states which were spending below the matching limit cut their average social service expenditures from own resources, while states spending above the matching limit did not. [Peterson]

In summary, federal grants policies during the eighties represented a significant break with past practice. Grants as a share of GDP suffered sustained declines, with grants to individuals rising at the expense of other categories of aid. A

number of categorical aid programs were converted into broad block grants, easing restrictions on the use of federal funds. Taken together, these changes put downward pressure on state and local government spending and -- as will be shown in the next section -- particularly on investment in physical and human capital.

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BOX

Indifference curves can be used to illustrate the effect of block and categorical matching grants on local public spending. In each of the accompanying charts, a community's private goods consumption is measured along the vertical axis, while the horizontal axis measures its grant-aided government spending. AB, the community's pre-grant budget constraint, shows the mix of private and publicly-provided goods the community can afford to purchase. Indifference curve  $I_1$  displays combinations of private and publicly-provided goods the community finds equally desirable; the higher the indifference curve, the greater the satisfaction. To maximize satisfaction given its budget constraint, the community will initially consume OC of private goods and OD of publicly-provided goods.

Assume the locality receives a block grant. Block grants affect consumption in much the same way as increases in income, with no impact on relative prices of public and private goods. In the first chart, a block grant of BG (measured in publicly-provided goods) results in a parallel outward shift of

the budget line to FG; although the community's income has increased, relative prices of public and private goods have remained the same. In the new equilibrium, government spending increases by DH, while decreases in taxes allow private consumption to rise by CJ. More generally, where the income elasticities of demand for public and private goods are positive, a block grant will cause both public and private spending to rise. Turning to the opposite case, where income elasticities are negative, a decline in block grants will cause public and private spending to fall.

Instead of a block grant, now assume that the community is offered a matching grant. As shown in the second diagram, the matching grant pivots the budget line to AK; the price of publicly-provided goods falls relative to that of private goods. In the new equilibrium public spending increases by DL, while private consumption rises by only CM. Matching grants generally stimulate more local government spending than block grants of equal magnitude because -- in addition to the income effect common to both types of grants -- the decrease in the relative price of publicly-provided goods leads communities to substitute public for private consumption. Similarly, declines in matching grants depress government spending more than equal cuts in block grants, because declines in matching grants make publicly-provided goods relatively more expensive.

An alternate way to view the difference between block and matching grants is shown in the third diagram. Both types of

grants are illustrated.  $E_m$  is the equilibrium associated with a matching grant, while  $E_b$  is the equilibrium with a block grant designed so that the grants each stimulate an identical ON units of local public spending. The cost of the matching grant to the higher level of government is equal to  $E_m P$ , the additional private consumption the locality would have to forego in order to obtain ON of publicly-provided goods. Similarly, the cost to the government under the block grant is  $E_b P$ . Since  $E_m P$  is less than  $E_b P$ , the objective of securing ON of local public spending is accomplished at a lower cost with the matching grant. [Musgrave]

## SECTION II: INVESTMENT IN PHYSICAL CAPITAL

Although state and local governments own the vast majority -- nearly 85 percent -- of public physical capital, they rely on Federal grants to fund roughly one-third of their infrastructure investments.<sup>7</sup> During the eighties, however, infrastructure grants declined sharply, contributing to the longer-term deceleration in public capital investment. The macroeconomic impact of the grants declines depends upon the extent to which cuts in grants led to decreased public investment, as well as upon the effect of lower public investment on the growth of output.

### GRANTS AND THE STOCK OF PUBLIC CAPITAL

After increasing throughout the fifties, sixties and seventies, Federal grants to state and local governments for investment in physical capital declined in constant dollars and as a share of GDP during the eighties (refer back to Chart 2). Grants for capital investment fell from an average of 0.77 percent of GDP during the seventies to an average of 0.59 percent of GDP between 1981 and 1990, with most of the decline concentrated in the first half of the decade (Table 3). The declines occurred in every major category of capital investment, with community development grants suffering the sharpest cuts.

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<sup>7</sup> In addition to grants, the federal government indirectly subsidizes state and local investments by allowing the deduction from federal income taxes of interest earned on state and local bonds.

Highway funding, by far the largest capital grant program, experienced more modest decreases; although grants for highway construction comprise nearly half of all capital grants to state and local governments, they accounted for less than one-third of the total decline.

The eighties' declines in Federal grants were accompanied by declines in state and local government investment and capital stock as a share of GDP (Table 4). During the early eighties, decreases in investment as a share of output closely mirrored declines in grants, while during the second half of the decade investment rose despite continued grants declines. Overall, the rate of capital formation fell from an average of 2.2 percent of GDP during the seventies to 1.8 percent of GDP between FY1981 and FY1990. By the late eighties, the state and local government capital stock had fallen to 35.2 percent of GDP, significantly lower than the seventies' average of 40.8 percent. Core capital stock -- that portion of the capital stock expected to have the greatest impact on private sector output -- declined commensurately, from 25.2 to 21.7 percent of GDP.<sup>8</sup>

Cuts in Federal grants were only one of several factors behind the decline in public infrastructure investment as a share of output during the eighties, however. It is particularly important to note that state and local government investment in physical capital began to slow during the early seventies, long

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<sup>8</sup> Core capital stock includes highways, mass transit facilities, airports, electric and gas facilities, water works and sewers. [Aschauer]

before the grants declines. Moreover, back-to-back recessions in the early eighties left states and localities with unusually low balances and necessitated widespread budget cuts. With some part of state capital investment financed through general funds budgets, deferral of infrastructure investment allowed budget reductions without short-term decreases in publicly-provided goods and services. Federal mandates which forced states to increase spending for social services -- particularly expansions of Medicaid coverage -- were an additional factor behind the slowdown in physical capital investment.

The impact of cuts in grants for highways on the eighties' deceleration of public capital investment warrants closer attention. Although grants for highway construction were cut less sharply than grants for community development or the environment, highways accounted for a disproportionate share of the decline in investment and capital stock as a share of GDP. Highways comprised an average of 38 percent of the state and local government capital stock between 1981 and 1990, but accounted for nearly 70 percent of its decline. One reason highways made up a relatively small proportion of the grants cuts but a large proportion of the infrastructure decline as a share of output is simply that federal grants for highway construction require matching contributions from state and local governments, so that any cut in aid leads to larger declines in investment. But factors other than grants cuts also contributed to the 1980's decline in highway capital. The dedicated fuel taxes (generally

levied on a cents-per-gallon basis) which finance much of states' contributions for road construction failed to keep pace with inflation during the late seventies and eighties. As rapidly increasing gasoline prices caused real consumption growth to decline, the growth of gas tax receipts and state highway spending decelerated as well [Winston & Bosworth '92].

In short, the decline in federal infrastructure grants was just one of several factors contributing to the eighties decline in the stock of public capital as a share of GDP. In order to separately identify the impact of changes in grants on changes in public capital, it is useful to consider a range of possible cases.

In Case I, grants cuts are responsible for roughly one-quarter of the deceleration in the growth of the state and local government capital stock during the 1980s. The estimate is constructed by first assuming that grants for infrastructure investment (as a share of GDP) had continued to grow at their 1970s rate. The cumulative difference between actual grants and what grants would have been had they continued to increase as they did during the seventies is then assumed to change the stock of real public capital by 40 cents for each dollar of grants.<sup>9</sup> The result is public capital stock growth averaging 1.61 percent per year during the eighties, as compared with actual growth of

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<sup>9</sup> Forty cents was used to construct Case I because it is on the low end of the range of grant impact estimates and is in line with results from the two studies which focus on highway grants and spending. [Meyers (85) and Phelps (69)]



1.43 percent over the decade; by 1990, the stock of real public capital would have been \$30 billion -- or 1.7 percent -- greater than it actually was.

Grants are assumed to stimulate more infrastructure spending in Case II than Case I. As before, the estimate is based on the assumption that real infrastructure grants had continued to grow at their 1970s rate. But Case II diverges from Case I by assuming that the difference between actual grants and what grants would have been affects the stock of real public capital on a dollar-for-dollar basis. As a result, Case II attributes nearly two-thirds of the deceleration in the growth of the public capital stock during the eighties to declines in aid. If grants had continued to grow strongly during the eighties and had boosted infrastructure spending on a dollar-for-dollar basis, the stock of public capital would have grown at an average annual rate of 1.87 percent and reached \$1,787 billion -- as compared to \$1,711 billion, by 1990.

#### GRANTS AND ECONOMIC GROWTH

It is reasonable to expect that the decline in publicly-provided capital as a share of GDP during the 1980s has slowed the growth of private output.<sup>10</sup> However, attempts to measure the impact of public capital on output have yielded

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<sup>10</sup> The stock of public capital directly affects the cost of private production; for example, poor roads increase travel time as well as wear and tear on private vehicles. Moreover, by making a region less attractive to labor and private capital, a lower stock of public capital indirectly raises production costs.

disparate -- and at times implausible -- results. Conventional growth accounting, utilizing Cobb-Douglas production functions with inputs paid their marginal products, suggests that the impact of the stock of public capital on the growth of private output is small at best. [Hulten & Schwab '78, Rubin '91] In contrast, more general aggregate production function studies have yielded a broad range of results (Table 5). Aggregate production function estimates of the elasticity of private output with respect to total public capital for the nation as a whole range from 0.03 to 0.56. Elasticity estimates for smaller geographical areas generally show a lower return to public capital, a plausible result because the estimates exclude benefit spillovers from one area to another.<sup>11</sup> [Munnell]

Although it is not credible to suggest that public capital has no effect on private output, the upper end of the elasticity estimates are equally suspect because, given the size of capital stock and output, they imply that the marginal product of public capital -- the increase in total output that results from a one percent increase in public capital input -- is more than four times that of private capital. If the elasticity of output with respect to public capital were to equal 0.56, at 1990 levels of capital stock and GDP the implied marginal productivity of public capital would have been 138.7 percent; a \$1 increase in

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<sup>11</sup> These estimates provide empirical support for using grants to subsidize government capital investment.

the stock of public capital would have boosted output by \$1.38.<sup>12</sup> (Viewed from a slightly different perspective, an elasticity of 0.56 percent implies that a \$1 investment in public capital in January, 1990 would have paid for itself by October of the same year!) In contrast, the elasticity of output with respect to private capital, as conventionally estimated, is roughly 0.3. Given the size of the private capital stock and GDP, an elasticity of 0.3 implies a marginal productivity of private capital of 30.8 percent, less than one-fourth that of public capital.

Any estimate of the impact of the eighties' cuts in infrastructure grants on economic growth depends upon both the output elasticity of public capital and the degree to which the decline in the stock of physical capital during the eighties is assumed to be attributable to the decline in grants (Table 6).<sup>13</sup> Given the uncertainty surrounding the elasticity measure, a range of estimates is used; 0.03 and 0.34 are the lower and upper bounds of recent public capital elasticity estimates for the nation as a whole. The intermediate elasticity estimate, 0.10,

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<sup>12</sup> The elasticity of public capital,  $\mathcal{E}$ , is:  $\frac{\Delta \text{GDP}/\text{GDP}}{\Delta \text{K}/\text{K}}$ ,

where K represents the stock of (non-military) public capital. Re-arranging terms,  $\mathcal{E} = (\Delta \text{GDP}/\Delta \text{K})(\text{K}/\text{GDP})$ . The first term is simply the marginal product of public capital. An elasticity of 0.56, coupled with a public capital stock of \$1977.8 billion and GDP of \$4897.2 billion in 1990, implies a marginal product of public capital equal to 138.7 percent in 1990.

<sup>13</sup> Estimates of the impact of cuts in infrastructure are based on the assumption that the eighties' declines in public investment were not offset by increases in private investment.

implies that the marginal rate of return to public capital is roughly equal to that of private. The greater the elasticity, the greater the impact of the cuts on output. Similarly, two cases are used to illustrate how much of the eighties' erosion in the state and local government capital stock was attributable to cuts in grants. In Case I, a \$1 decline in grants leads to a \$.40 decline in the stock of public capital, while grants cuts affect public capital on a dollar-for-dollar basis in Case II. The greater the impact of grants on capital formation, the greater the effect on output.

Where the output elasticity of public capital is low and most of the deceleration in the growth of real public capital is attributable to factors other than cuts in grants, the decline in aid to state and local governments is estimated to have lowered output growth by only 0.005 percentage points per year and 0.05 percentage points over the decade of the eighties.<sup>14</sup>

The effect on output increases significantly, however, with higher elasticities and more of the decline in capital stock attributable to declines in grants. For example, if the output elasticity of public capital is 0.10 (recall that an elasticity of 0.10 implies that additions to public and private capital are equally productive) and grants cuts decrease public spending on a dollar-for-dollar basis, the impact on output is more than eight

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<sup>14</sup> The annual loss in the growth of output is equal to the difference between capital stock growth in the absence of the grants cuts and actual capital stock growth, multiplied by the output elasticity of public capital.

times greater.

If, as is likely, the true impact of the decrease in infrastructure grants lies somewhere between these two cases, it suggests that the policy has resulted in a small but continuing loss of economic output.

### SECTION III: INVESTMENT IN HUMAN CAPITAL

Investment in the quality of labor, like investment in physical capital, promotes the growth of economic output. For our present purposes human capital investment will be narrowly defined to include only job training and education. In practice, however, many social service, nutrition, and health programs also contain significant investment components.<sup>15</sup>

Sharp declines in federal grants for job training and public service employment are estimated to have slowed the growth of output by as much as 0.4 percentage points during the eighties. The impact of cuts in federal grants for education -- particularly in the short to medium term -- are likely to have been considerably smaller. Although federal education grants did decrease as a share of GDP over the decade, the declines were less severe than for job training. Moreover, because the federal government has traditionally played only a secondary role in education finance, states and localities may have been more willing to replace lost aid. Finally, even if the loss of federal education aid did result in a lower level of investment in education, the impact of the decline on growth would only be felt in the (very) long run as students entered the labor force.

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<sup>15</sup> For example, the Head Start program provides comprehensive educational, medical, and nutritional services to children from low-income households. Although the budget classifies Head Start as a social service, recent research suggests that the program has succeeded in enhancing its young participants' cognitive development in ways that should ultimately affect their adult productivity. [CBO '82]

## JOB TRAINING AND EMPLOYMENT PROGRAMS

Expenditures for publicly-funded job training and employment services declined sharply during the eighties. Nearly all government spending for training and employment is funded by the federal government, either through grants to state and local governments or -- to a lesser extent -- through direct federal expenditures.<sup>16</sup> Federal grants for training and employment fell from an average of 0.24 percent of GDP during the seventies to 0.08 percent of GDP during the eighties, with the steepest cuts occurring early in the decade (Table 7). The impact of the grants cuts was compounded by declines in direct federal spending for training and employment services (Table 8). Finally, survey evidence suggests that few states or localities used their own funds to replace cuts in federal job training expenditures, perhaps because training and (more generally) redistribution were viewed as federal responsibilities. [Nathan & Doolittle]

The Comprehensive Employment and Training Act (CETA) bore the brunt of the 1980's declines in federal grants and expenditures for job training. CETA, enacted in 1973, consolidated many of the employment and training programs of the late sixties and early seventies, including classroom training,

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<sup>16</sup> Public spending for job training is itself dwarfed by the private training expenditures of employers and individuals. It is also interesting to note that federal funding for job training is only the "activist" part of national labor policy. The federal government shapes the skills distribution of the labor force through myriad policies, ranging from minimum wages to immigration. [Johnson]

on-the-job training, work experience and public service employment. The CETA program initially focussed on training to combat structural unemployment. Priorities changed with the 1974-75 recession, however, and CETA's primary emphasis shifted to counter-cyclical public service employment programs. At its peak in 1978, 750,000 people -- roughly 10 percent of all unemployed -- were enrolled in public service employment under CETA. [Benedick] In 1981, CETA's public service employment program was eliminated and funding for the remaining CETA components was sharply reduced. The following year, CETA was replaced by a new block grant for training, the Jobs Training Partnership Act (JTPA).

It is particularly difficult to assess the economic impact of the decline in job training grants, in part because the mix of programs and participants changed dramatically over time. Within CETA, public service employment began as only a minor component of the program but subsequently became CETA's primary focus. The population served by CETA also shifted, as the program came to focus more narrowly on the economically disadvantaged. The change from CETA to JTPA was no less significant. Public service employment was prohibited under JTPA. Emphasis shifted from classroom training and work experience to job search assistance and private sector placements. The payment of stipends -- which had been the norm under CETA -- was strictly limited.

The wide range in estimates of CETA participants' post-



program earnings gains also contribute to the difficulty in assessing the program's impact on the economy (Table 9). The highest statistically significant estimate of earnings gains for CETA's on-the-job training participants was \$2,055 per year, roughly four times larger than the lowest estimate. Estimates of the earnings effect resulting from CETA's public service employment program ranged from losses of \$836 per year to gains of \$1,660.<sup>17</sup> In general, however, public service employment and on-the-job training had a greater impact on earnings than either classroom training or work experience. Averaging the estimated earnings gains from 11 non-experimental studies, the mean increase in post-program earnings for on-the-job training participants was \$991 per year, slightly higher than the gains achieved by participants in public service employment programs. In contrast, participants in CETA's classroom training and work experience programs averaged earnings increases of only \$285 and \$154 per year.

The wide range of estimated earnings effects is particularly surprising given the studies' use of a common data source.<sup>18</sup> The disparities have been attributed to the non-

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<sup>17</sup> Similarly, estimates of CETA's impact on average post-program earnings by demographic group range from annual losses of more than \$750 for young minority men to gains of \$1,300 for women. In general, CETA was significantly more effective in boosting women's earnings than men's, with most of the impact attributable to increases in hours worked rather than to higher hourly wages (Table 10). [Bassi & Ashenfelter]

<sup>18</sup> Empirical evaluations of the CETA program are based on the Continuous Longitudinal Manpower Survey (CLMS), conducted by the Bureau of the Census. A large-scale national survey of CETA

experimental nature of the data. [Barnow, Bassi & Ashenfelter]  
In order to assess CETA's impact on earnings, researchers created comparison groups which were alike in every possible characteristic except program participation. Unfortunately, some of the characteristics which affect an individual's earnings -- such as motivation -- are both unobservable and affect program participation. Much of the disparity in estimates of earnings impacts results from this selection bias.<sup>19</sup>

Given the problem of selection bias, some analysts have suggested treating estimates of earnings impacts derived from non-experimental studies as lower bounds. To take a specific example, there was no way for researchers to know when members of comparison groups had also participated in job training programs. To the extent that the comparison groups were thus "contaminated" -- and assuming training has a positive impact on earnings -- the increase in earnings associated with CETA participation is understated. [Bassi & Ashenfelter]

Even greater difficulties arise in making the transition from CETA's effect on individuals' earnings to its impact on capital formation and economic growth. It is

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participants, the CMLS includes detailed information about employment experience before and after training as well as data on personal characteristics. Information was obtained from CETA application forms and from surveys of participants as they entered the program and roughly 6, 18 and 36 months later.

<sup>19</sup> A comparison of results from experimental and non-experimental studies suggests that data problems associated with the latter are most severe for studies of youth training programs and over long periods of time. [Bassi & Ashenfelter]

reasonable to assume that any increase in post-program earnings of CETA participants reflects a corresponding increase in the production of goods and services. Ultimately, however, CETA's effect on the economy depends not only on the number of program participants and their earnings gains but also on the program's impact on nonparticipants, which in turn is a function of the underlying market for labor.<sup>20</sup>

Job training programs themselves do not increase the private sector's demand for labor. Where CETA participants obtain jobs that -- in the absence of the program -- would have been filled by others, the use of postprogram increases in earnings overstates CETA's impact on output. Studies of displacement effects in CETA's public service employment program suggest that displacement was lowest in programs which focused on serving the disadvantaged, and tended to rise over time within programs.

Alternatively, increases in participants' postprogram earnings may understate CETA's macroeconomic impact, particularly where labor markets are imperfect. Suppose, for example, there are two distinct markets for labor -- the market CETA participants have exited and the market they enter after completing training. Further assume that the market trainees have exited is characterized by excess unemployment while the

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<sup>20</sup> In theory, an increase in the supply of labor associated with job training could also result in a lower equilibrium level of wages. In practice, however, given the small number of CETA trainees relative to the total labor force, the effect is likely to be negligible.

receiving market is characterized by full employment. With no loss in employment in the source market and no displacement in the receiving market, the social return to training is equal to participants' total postprogram earnings, rather than to their increase in earnings. [Johnson]

Given these difficulties, any estimate of the macroeconomic impact of the eighties' decline in employment and training grants is -- at best -- only a rough approximation. Each of the following estimates is based on two assumptions: graduates of employment and training programs do not displace other workers; and the social return to training is equal to participants' post-program earnings gains.

Begin with CETA's Public Service Employment program (PSE). In order to estimate the impact of public service employment on GDP growth, I simply assumed that the output produced by program participants while employed in government jobs was just equal to the sum of foregone earnings and administrative costs.<sup>21</sup> The assumption is conservative; foregone earnings of CETA participants were generally low, while administrative costs associated with PSE were negligible. The effect of the assumption is to limit the impact of public service

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<sup>21</sup> It is interesting to note that the Reagan Administration's philosophy of down-sizing government stemmed in part from the belief that much public sector output -- such as output produced under CETA's public service employment program -- is not socially useful. While there is no market basis for assuming that the output of PSE participants is just equal to their earnings, however, it seems equally implausible to assume their output would be nil. [Benedick]

employment on GDP to the increase in participants' post-program earnings.

In part because so few public service employees entered the job market in any single year, the impact of the program on GDP was relatively modest. Assume the program had continued throughout the eighties, with 100,000 public service employees graduating to unsubsidized employment each year and achieving an average \$909 increase in annual earnings as a result of their experience. Nominal GDP growth would only have averaged 0.002 percentage points more per year and a total of 0.02 percentage points more over the decade (Table 11). The impact on GDP growth increases significantly, however, with increases in PSE graduates and post-program earnings gains. If 250,000 PSE participants had entered the market each year and had experienced annual earnings gains of \$1,660 per person, the impact on GDP growth would have been as much as 0.1 percentage points over the decade.

Estimates of the economic impact of CETA's job-training components are more straight-forward. Assume that 700,000 CETA trainees had graduated to the unsubsidized job market each year during the eighties and that participants' average post-program earnings gains were at the upper end of the range of estimates. Under these assumptions, the impact on GDP growth would have been as much as 0.3 percentage points over the decade.

Although our primary focus has been on efficiency -- the impact of grants cuts on economic output -- the employment and training programs of the sixties and seventies were also

motivated by equity concerns. It is thus interesting to ask whether the cuts in grants for job training and employment services were accompanied by changes in the distribution of aid. In the transition from CETA to JTPA, the formula for allocating employment and training grants across states was modified to put greater emphasis on unemployment than on poverty. Although virtually all states experienced cuts in employment and training grants during President Reagan's first term, large eastern states -- where measured unemployment was relatively low -- experienced the largest cuts. [Nightingale] Within states, local governments were particularly affected by the cutbacks. Not only did localities see their training dollars cut, but they also lost significant numbers of public employees with the termination of public service employment programs. Finally, the change from CETA to JTPA also had a negative impact on low-income/low-asset individuals, who could no longer rely on stipends or PSE salaries to support their personal investment in human capital.

#### EDUCATION

Federal education spending also declined during the Reagan Presidency, although less steeply than expenditures for employment and training programs. Education grants to state and local governments fell from an average of 0.31 percent of GDP during the seventies to 0.21 percent of GDP during the period 1981 to 1990, with most of the cuts occurring early in the decade (Tables 7 and 12). Coupled with declines in direct federal

education spending, total federal expenditures for education fell from an average of 0.79 percent of GDP during the seventies to 0.63 percent from 1981 to 1990.

Compared with state and local governments, however, the federal government has traditionally played only a secondary role in education finance. Although federal involvement increased during the sixties and seventies following the 1965 enactment of the Elementary and Secondary Education Act (ESEA), the federal government's share never exceeded ten percent of total public spending. Because the federal contribution is relatively small, any assessment of the impact of the decline in grants must begin by asking whether states and localities "ratified" the cuts or instead increased spending from own-source receipts to replace the loss of federal funds.

Evidence on the extent to which states and localities ratified the cuts in federal education grants is mixed. Declines in state and local government education spending -- from an average of 5.18 percent of GDP during the seventies to 4.88 percent of GDP during the period from 1981 to 1988 -- suggest the cuts were ratified. In contrast, continued growth in real spending per pupil and increases in the "quality" of school inputs during the eighties suggest that lower levels of government replaced at least a portion of the loss of federal funds (Table 13).<sup>22</sup> Real expenditures per pupil in public

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<sup>22</sup> The rise in real per pupil expenditures during the eighties was partly attributable to declining enrollments and to the enactment of legislation requiring education for the

elementary and secondary education rose from an average of \$3,629 during the latter half of the seventies to \$4,270 during the eighties. Moreover, such measures of educational quality as teacher-pupil ratios and teachers' levels of education and experience also continued to rise. [Chubb and Hanushek]

The long-run importance of education in boosting economic growth is well established. More than one-quarter of the growth in output per worker over the period 1929 to 1982 is attributable to increases in the level of education. [Denison] Moreover, increases in both the quantity of education (as measured by years of schooling) and the quality of education (as measured by such variables as pupil-teacher ratios and teachers' education levels) have contributed to growth.<sup>23</sup> Eventually, lower levels of human capital investment associated with lower levels of education expenditures would likely dampen the growth of GDP.

Although there are studies which have estimated the impact of education on long-run economic growth, no studies have identified the returns specifically associated with the federally-financed portion of the investment. Moreover, to the extent the decline in federal aid did lead to lower investment in

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handicapped (which sharply increased the number of teachers without affecting the number of students in a typical classroom).

<sup>23</sup> Although the impact of school quality on student achievement as measured by standardized tests remains unclear, the small number of studies which have related school quality with earnings have found a significantly positive relationship between them. [Card and Krueger, Welch]



education, its impact on GDP would only be felt in the (very) long run as students entered the labor force.

Instead, the more immediate impact of the cutbacks in federal education grants was on the distribution of aid. The provision of equal educational opportunity has been a primary goal behind the rise in federal education funding since the sixties. The ESEA, enacted as part of Johnson's war on poverty, initiated federal assistance to school districts with disproportionate numbers of disadvantaged students. Since then, assistance has been given to other groups of students with special needs, including the disabled and students with limited proficiency in English.

In a sharp break with this emphasis on equality of educational opportunity, however, cuts in federal education grants during the eighties tended to be counter-equalizing, both across and (most importantly) within states. During the early eighties -- the period of the steepest grants cuts -- changes in education grants per capita were positively correlated with levels of personal income per capita and median income. Poor states suffered deeper-than-average cuts in federal aid to education as a share of GDP.

Survey evidence suggests that the biggest distributional impact of the eighties' cuts in education grants occurred within states. [Nathan & Doolittle] As part of the Omnibus Budget Reconciliation Act of 1981, 29 categorical education grant programs were consolidated into the Elementary

and Secondary Education Block Grant. Under the old categorical grant programs, federal grants had been spread among states, localities and nonprofit agencies; the federal government channeled much of the aid to large cities serving disproportionate populations of disadvantaged and non-English speaking students. Under the new block grant, federal education grants were directly distributed to states, which were required to pass along at least 80 percent of the funds to local school districts. States tended to spread the federal funds to many more school districts -- irrespective of need -- than had received aid under the prior categorical programs. As a result, large urban school districts suffered disproportionate declines in assistance.

In summary, the federal government plays only a secondary role in education finance, and the degree to which states and localities increased spending from own-source receipts to replace the loss of federal education grants remains unclear. To the extent the federal grants cuts were ratified, the lower levels of human capital investment associated with lower levels of education spending have likely slowed long-run economic growth. The more immediate impact of the cutbacks in education grants was on the distribution of aid, however. The eighties cuts in federal grants for education were counter-equalizing. Within states, large urban school districts with disproportionate numbers of disadvantaged students were particularly hard hit.

## CONCLUSION

The eighties -- particularly the first half of the decade -- was a period of significant change in federal grants to states and localities. Grants decreased as a share of GDP, the first sustained decline in aid since the forties. At the same time, a longer-term shift in the composition of grants accelerated, with aid to individuals rising at the expense of other major grants categories. As a result, funding for investment in physical and human capital bore a disproportionate share of the burden of the decline in total grants. Grants for physical capital investment fell from an average of 0.77 percent of GDP during the seventies to an average of 0.59 percent of GDP between 1981 and 1990. Over the same period, grants for job training and education fell from 0.55 to 0.29 percent of GDP. The other hallmark of federal grants policy during the eighties was change in the structure of aid. The conversion of categorical matching aid programs into unconditional block grants eased restrictions on the use of federal funds.

Both cuts in grants levels and change in the structure of aid tended to decrease state and local government spending. The decline in federal grants for investment in physical capital is estimated to have curbed average annual growth of state and local government capital (as a share of GDP) by roughly 0.5 percentage points during the eighties, and to have slowed the growth of output by as much as 0.7 percentage points. Similarly, cuts in grants for job training and employment programs may have

decreased GDP growth as much as 0.4 percentage points over the decade, while declines in federal aid to education will likely slow growth in the very long run. Although these effects are not large, they suggest that changes in federal grants policies during the eighties worked to slow economic growth.

Chart 1  
**TOTAL GRANTS TO STATE AND LOCAL GOVERNMENTS**  
 AS A SHARE OF GDP  
 (CALENDAR YEAR)

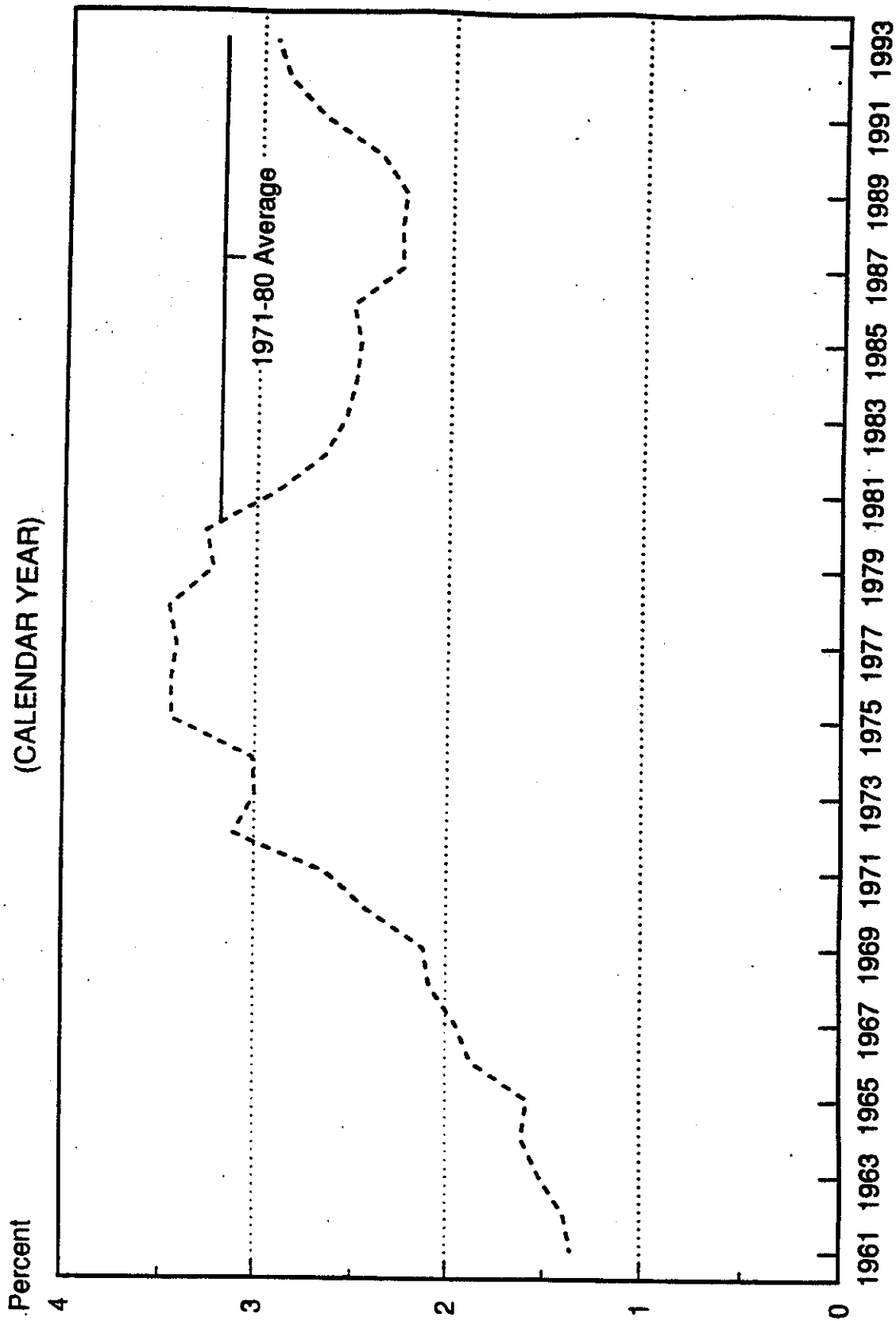


Table 1

**FEDERAL GRANTS TO STATE AND LOCAL GOVERNMENTS: BY FUNCTION**  
**AS A SHARE OF GDP**  
 (calendar year)

	Ten-Year Averages			Five-Year Averages		
	<u>1961-70</u>	<u>1971-80</u>	<u>1981-90</u>	<u>1976-80</u>	<u>1981-85</u>	<u>1986-90</u>
Welfare and Social Services	0.48	0.69	0.58	0.68	0.61	0.56
Medicaid	0.11	0.46	0.61	0.51	0.56	0.66
Transportation	0.52	0.41	0.37	0.41	0.38	0.36
Highways	0.51	0.34	0.28	0.32	0.29	0.28
Transit	0.00	0.05	0.07	0.07	0.08	0.05
Education	0.22	0.31	0.21	0.28	0.22	0.20
Urban Renewal & Community Development	0.06	0.15	0.10	0.15	0.12	0.07
Water and Sewage	0.01	0.13	0.07	0.16	0.05	0.05
Job Training and Employment	0.02	0.24	0.08	0.33	0.10	0.06
Health and Hospitals	0.11	0.14	0.09	0.13	0.09	0.09
Other <sup>1</sup>	0.26	0.67	0.37	0.72	0.49	0.29
<b>Total Grants</b>	<b>1.79</b>	<b>3.20</b>	<b>2.48</b>	<b>3.37</b>	<b>2.62</b>	<b>2.34</b>

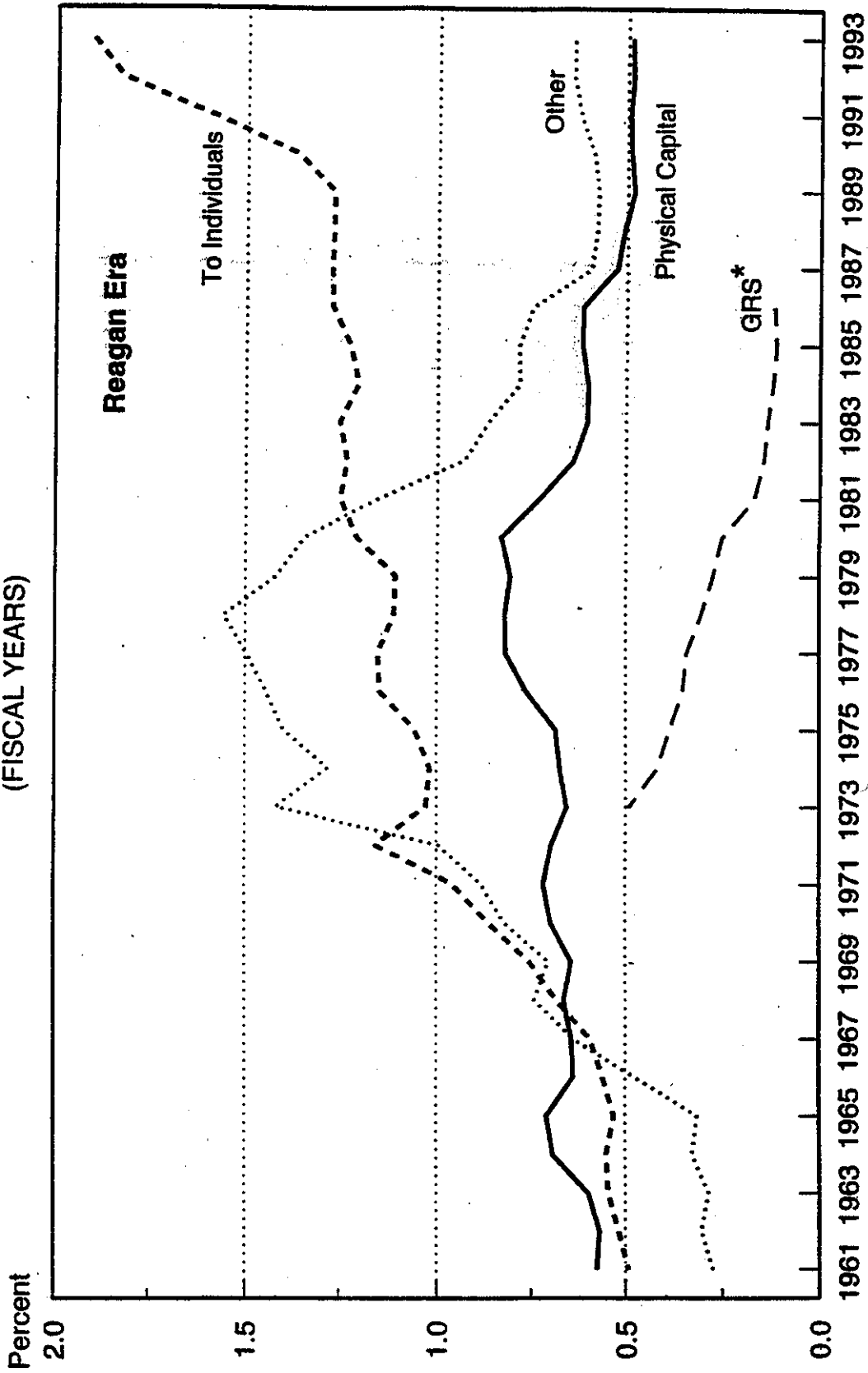
<sup>1</sup>The largest component of the "other" category is General Revenue Sharing, which began in 1973 and was eliminated in 1986.

Source: NIPA, Table 3.16

Chart 2

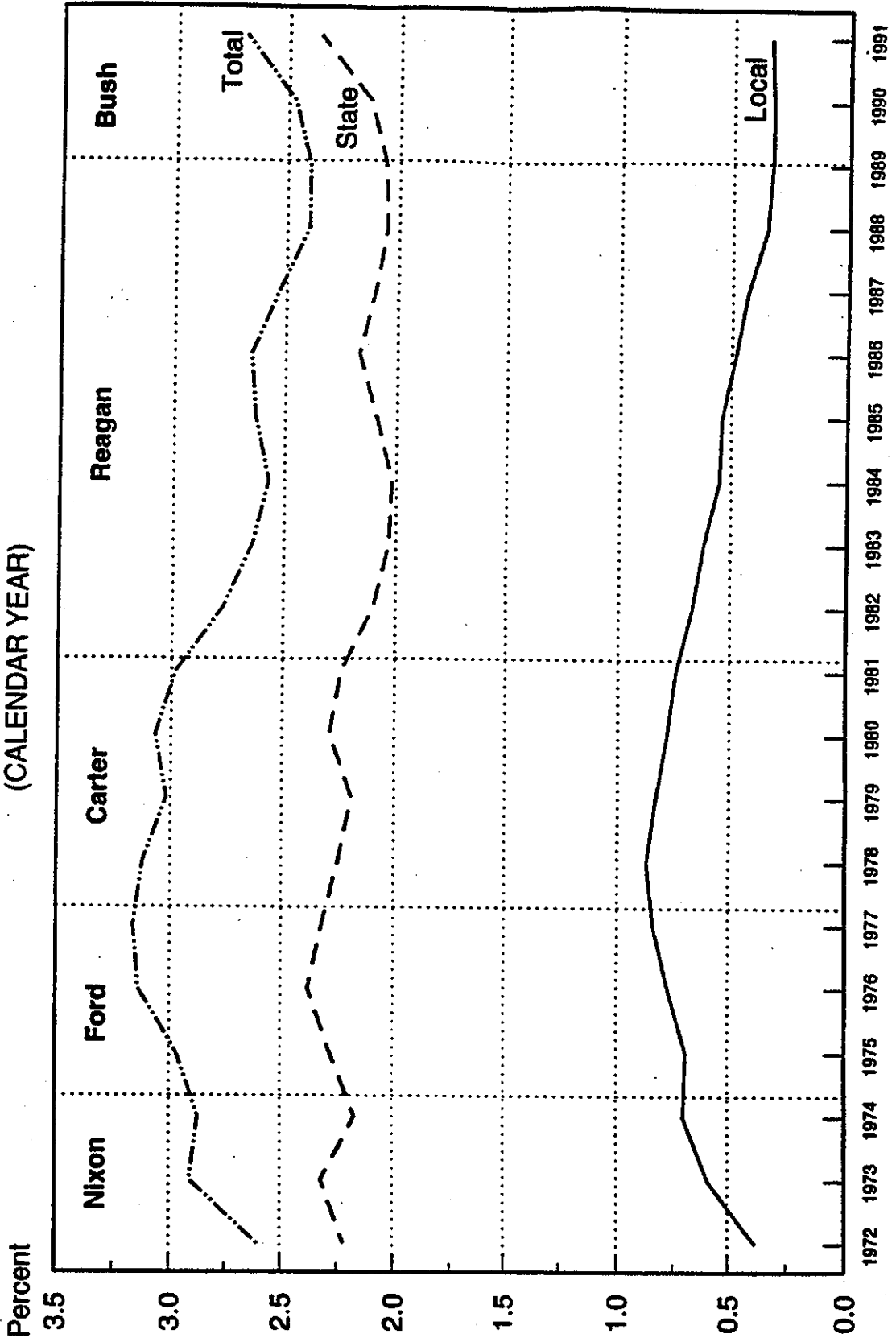
# GRANTS TO STATE AND LOCAL GOVERNMENTS BY PURPOSE

AS A SHARE OF GDP  
(FISCAL YEARS)



\* General Revenue Sharing

**Chart 3**  
**State and Local Intergovernmental Revenues\***  
**From the Federal Government**  
 AS A SHARE OF GDP  
 (CALENDAR YEAR)



\* Intergovernmental revenues include federal grants, revenue shared with the federal government, and payments for federal services. Federal grants account for 86 percent of all state and local intergovernmental revenues originating at the federal level.

Sources: ACIR, "Significant Features of Fiscal Federalism" and Bureau of the Census, "Governmental Finances".



Table 2

**FEDERAL GRANTS AND STATE AND LOCAL GOVERNMENT SPENDING  
1981 TO 1990**

<u>FUNCTION</u>	<u>FEDERAL GRANTS AS SHARE OF STATE &amp; LOCAL GOVERNMENT SPENDING</u>		<u>CORRELATION COEFFICIENT*</u>
	<u>1981-1985</u>	<u>1986-1990</u>	
Welfare and Social Services	58.7%	55.7%	0.83
Transportation	29.6	27.2	0.67
Highways	27.3	26.2	0.74
Transit and Railroads	37.1	25.4	0.80
Education	4.6	4.1	0.60
Water and Sewerage	49.8	37.3	0.63
Job Training and Services	87.1	66.6	0.80
Health and Hospitals	17.3	16.1	0.66
Memo: All Grants and Spending	22.1	19.1	0.71

\* Change in federal grants correlated with change in state and local government expenditures, 1981 through 1990.

Source: NIPA, Tables 3.16 and 3.17.

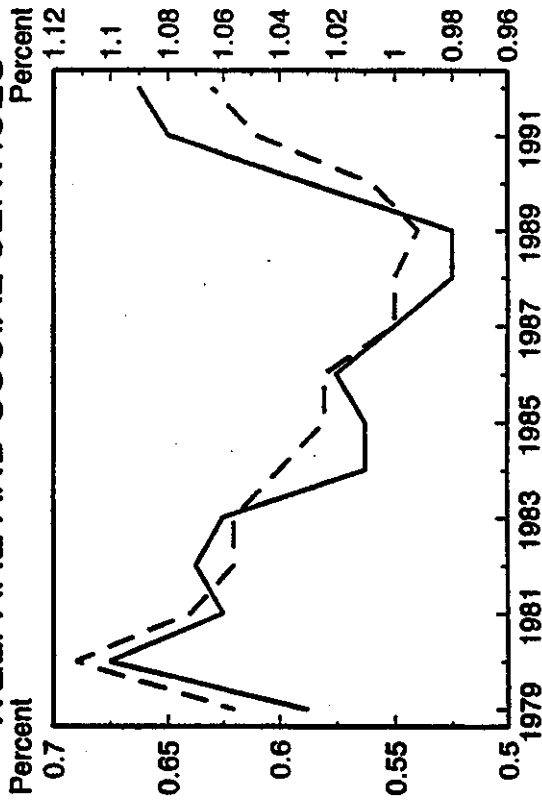
Chart 4

# GRANTS AND EXPENDITURES FOR SELECTED FUNCTIONS AS A SHARE OF GDP (CALENDAR YEAR)

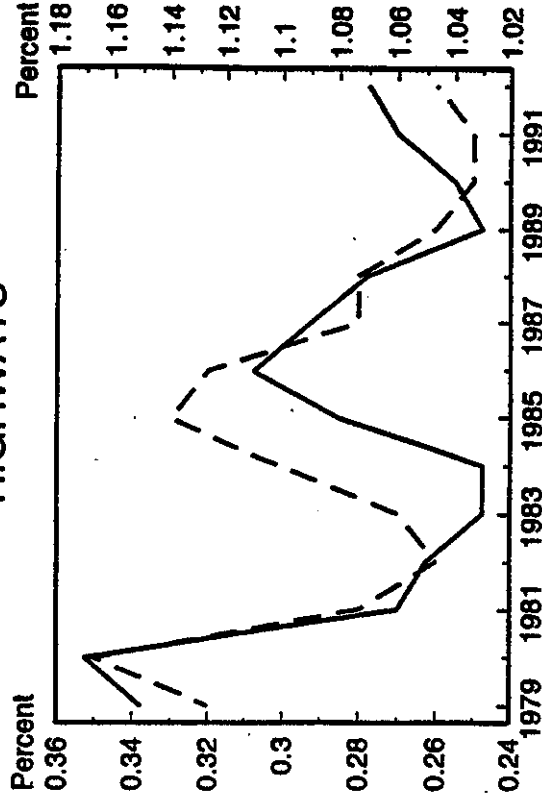
--- Federal Grants-in-Aid (left scale)

— State and Local Government Expenditures (right scale)

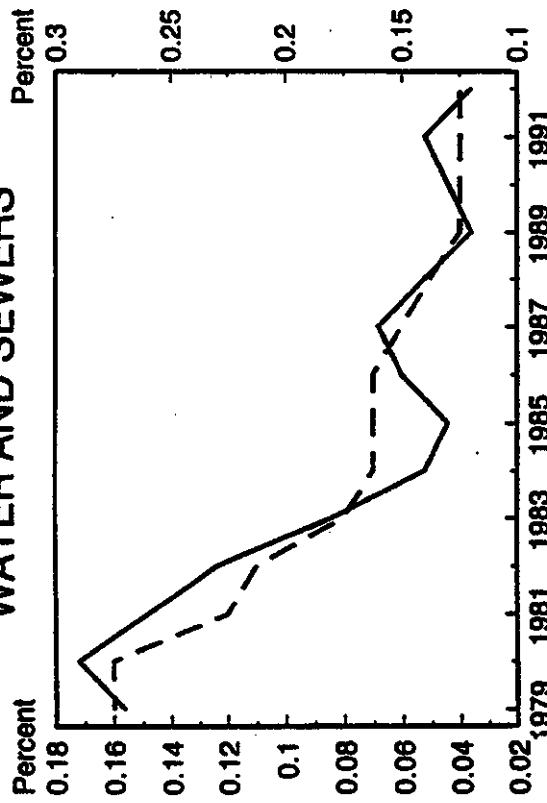
## WELFARE AND SOCIAL SERVICES



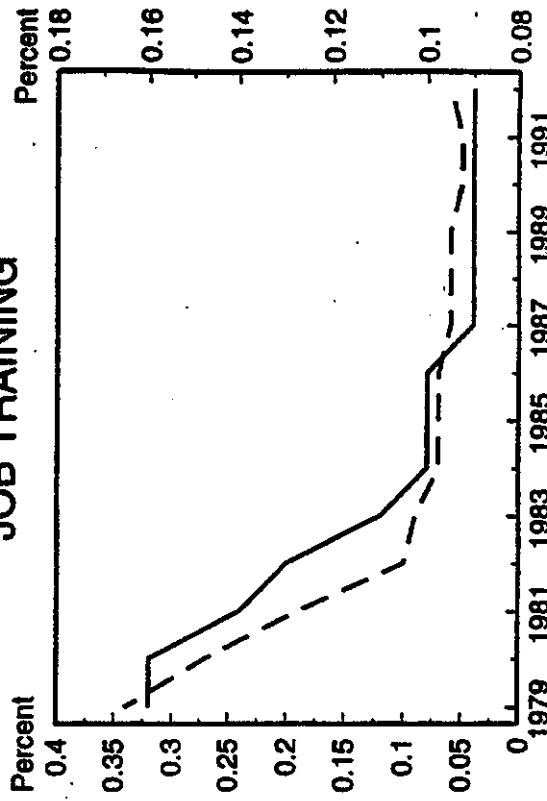
## HIGHWAYS



## WATER AND SEWERS



## JOB TRAINING



BOX

CHART 1  
UNCONDITIONAL GRANT

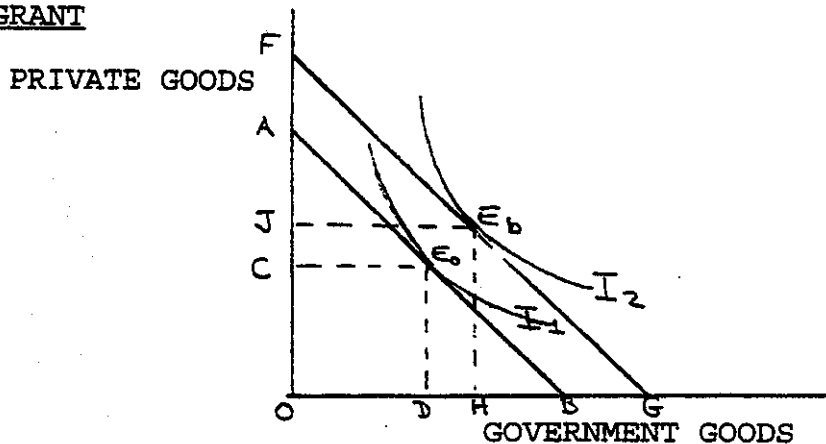


CHART 2  
CATEGORICAL MATCHING GRANT

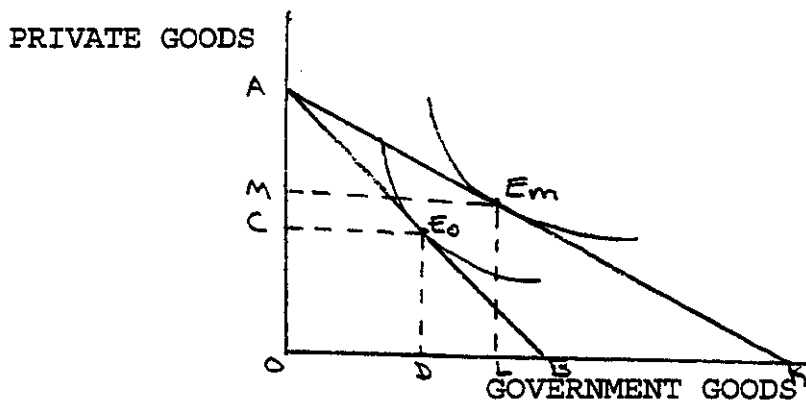


CHART 3  
UNCONDITIONAL VS MATCHING GRANTS

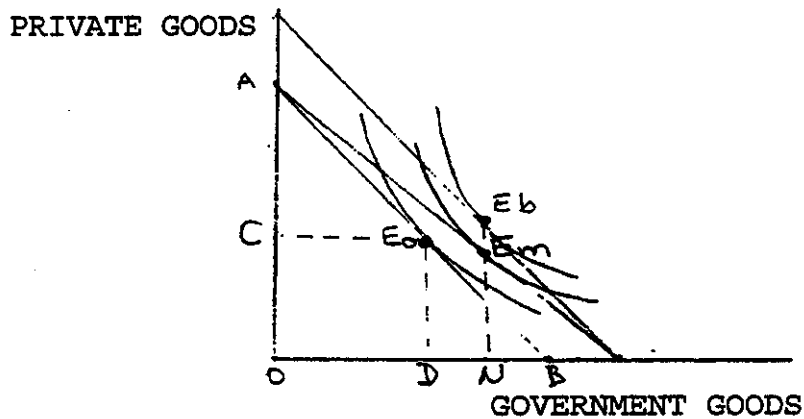


Table 3

**REAL GRANTS FOR PUBLIC PHYSICAL CAPITAL INVESTMENT**  
By Fiscal Year  
(percent of real GDP)

	<u>Total<sup>1</sup></u>	<u>Transportation Total<sup>2</sup> Highways</u>	<u>Community Development<sup>3</sup></u>	<u>Environment<sup>4</sup></u>	<u>Other<sup>5</sup></u>
	<b>Ten-Year Averages</b>				
1951-60	0.31	0.26	0.01	0.01	0.04
1961-70	0.66	0.52	0.07	0.03	0.04
1971-80	0.77	0.41	0.21	0.14	0.03
1981-90	0.59	0.37	0.12	0.09	0.01
	<b>Five-Year Averages</b>				
1971-75	0.72	0.41	0.18	0.09	0.04
1976-80	0.83	0.40	0.23	0.18	0.02
1981-85	0.65	0.38	0.15	0.11	0.01
1986-90	0.53	0.36	0.08	0.07	0.01

<sup>1</sup>Total non-military grants to state and local government for major physical capital investment.

<sup>2</sup>Includes highways, mass transportation and airport grants.

<sup>3</sup>Includes community development and urban renewal.

<sup>4</sup>Grants for natural resources and the environment (primarily pollution control facilities).

<sup>5</sup>Includes housing, education, training, employment and social services grants.

Sources: OMB, Budget of the U.S. Government: Fiscal Year 1994. Highway grants are FRBNY estimates.

Table 4

**REAL STATE AND LOCAL GOVERNMENT INVESTMENT AND CAPITAL STOCK<sup>1</sup>**  
By Fiscal Year  
(percent of real GDP)

	STATE & LOCAL INVESTMENT		STATE & LOCAL NET CAPITAL STOCK		FEDERAL, STATE, & LOCAL Investment Net Capital Stock	
	Total	"Core" <sup>2</sup> Highways	Total	"Core" <sup>2</sup> Highways	Total	"Core" <sup>2</sup> Highways
	<b>Ten-Year Averages</b>					
1951-60	2.55	1.47	1.04	33.45 (4.54)	22.34	15.25
1961-70	3.12	1.78	1.21	38.87 (5.15)	25.05	17.48
1971-80	2.17	1.15	0.66	40.84 (2.10)	25.16	16.95
1981-90	1.82	0.95	0.50	36.78 (1.43)	22.68	14.12
	<b>Five-Year Averages</b>					
1971-75	2.48	1.29	0.80	41.81 (2.83)	25.83	17.73
1976-80	1.86	1.01	0.52	39.87 (1.36)	24.50	16.17
1981-85	1.71	0.93	0.47	38.34 (0.98)	23.70	14.96
1986-90	1.93	0.97	0.53	35.21 (1.88)	21.66	13.29

NOTE: Figures in parentheses denote the average percent change--in levels--of total state and local government net capital stock.

<sup>1</sup>Non-residential, non-military investment and capital stock.

<sup>2</sup>Core infrastructure consists of highways, mass transit, airports, electric and gas facilities, water works and sewers.

<sup>3</sup>Includes streets.

Source: BEA, Wealth Survey.

Table 5

**PRODUCTIVITY OF PUBLIC CAPITAL:  
EVIDENCE FROM AGGREGATE PRODUCTION FUNCTION STUDIES**

<u>Author</u>	<u>Level of Aggregation</u>	<u>Output Elasticity of Public Capital</u>
Aschauer ('89)	National	0.38 to 0.56
Munnell ('90a)	National	0.34
Aaron ('90)	National	0.09 to 0.34
Hulten & Schwab ('91)	National	0.03 to 0.21 0.53*
Holtz-Eakin ('92)	Regions	-0.12
Costa, Ellison & Martin ('87)	States	0.20
Munnell ('90b)	States	0.15
Eisner ('91)	States	0.17
Garcia-Mila & McGuire ('92)	States	0.04*
Holtz-Eakin ('92)	States	-0.05
Eberts ('86 & '90)	Metropolitan Areas	0.03
Duffy-Deno & Eberts ('89)	Metropolitan Areas	0.08

\*Output elasticity of highways and roads.

Table 6

**EIGHTIES DECLINE IN AVERAGE ANNUAL OUTPUT GROWTH DUE TO SLOWER STATE AND LOCAL GOVERNMENT CAPITAL FORMATION**  
(average annual growth in percent)

	<u>Case I</u>	<u>Case II</u>
<u>OUTPUT ELASTICITY OF PUBLIC CAPITAL</u>		
.03	.005	.013
.10	.018	.044
.34	.061	.150

**IMPACT OF GRANTS ON CAPITAL FORMATION\***

\* Both cases assume grants for infrastructure investment (as a share of GDP) continue to grow at their 1970s rate. In Case I, a \$1 decline in grants leads to a \$.40 decline in the stock of public capital. In Case II, grants cuts affect public capital on a dollar-for-dollar basis.

**FEDERAL GRANTS FOR HUMAN CAPITAL INVESTMENT  
JOB TRAINING AND EDUCATION  
AS A SHARE OF GDP  
(CALENDAR YEAR)**

	-----EDUCATION*-----			
TOTAL TRAINING AND EDUCATION	TRAINING AND EMPLOYMENT	Sub-Total Education	Research and Other	
		Elementary and Secondary	Higher	
1952-60	N.A.	0.07	N.A.	N.A.
1961-70	0.26	0.22	0.13	0.06**
1971-80	0.55	0.31	0.20	0.08
1981-90	0.29	0.21	0.15	0.04
		<b>Ten-Year Averages</b>		
1971-75	0.49	0.34	0.22	0.09
1976-80	0.61	0.28	0.18	0.07
1981-85	0.32	0.22	0.15	0.04
1986-90	0.26	0.20	0.14	0.04
		<b>Five-Year Averages</b>		

N.A. Not Available.

Note: The above figures include grants for veterans' education programs.

\*Excludes Impact Aid

\*\*Averages for 1965 to 1970

Sources: BEA, Table 3.16 & OMB, Table 12.3



**JOB TRAINING AND EMPLOYMENT SERVICES: FEDERAL EXPENDITURES  
AS A SHARE OF GDP  
(CALENDAR YEAR)**

	<u>TOTAL</u>	<u>GRANTS</u>	<u>DIRECT</u>
	<b>Ten-Year Averages</b>		
1952-60	N.A.	N.A.	0.01
1961-70	0.11	0.04*	0.09
1971-80	0.56	0.24	0.32
1981-90	0.21	0.08	0.13
	<b>Five-Year Averages</b>		
1971-75	0.40	0.15	0.25
1976-80	0.73	0.33	0.40
1981-85	0.26	0.10	0.16
1986-90	0.16	0.06	0.10

N.A. Not Available

Note: Other than programs financed through federal grants, state and local governments spend very little on job training and employment. During the eighties, state and local government training expenditures--excluding federal grants--averaged only 0.02 percent of GDP.

\*Average for 1965 to 1970

Sources: BEA, Tables 3.16 and 3.17

Table 9

**IMPACT OF CETA ON PARTICIPANTS' ANNUAL EARNINGS\***  
**BY PROGRAM COMPONENTS**  
(dollars)

	RANGE OF ESTIMATES**		MEAN OF ESTIMATES**	NUMBER OF STUDIES WITH SIGNIFICANT RESULTS***	TOTAL STUDIES USING VARIABLE
	Minimum	Maximum			
Public Service Employment	-\$836	\$1,660	\$909	8	10
Work Experience	-1,108*	1,400	154	8	11
Classroom Training	-890*	1,300	285	10	11
On-The-Job Training	531	2,055	991	10	11

\*With one exception, estimates in post-program year dollars.

\*\*Only estimates significant at the 0.5 level are included.

\*\*\*At least one significant coefficient for any demographic cohort.

\*Participation restricted to young adults.

Table 10

**IMPACT OF CETA ON PARTICIPANTS' ANNUAL EARNINGS\***  
**SUMMARY OF NON-EXPERIMENTAL RESULTS**  
(dollars)

	RANGE OF ESTIMATES**		MEAN OF ESTIMATES**	NUMBER OF STUDIES WITH SIGNIFICANT RESULTS	TOTAL STUDIES USING VARIABLE
	Minimum	Maximum			
Overall	\$129	\$596	\$342	3	3
All Women	800	1,300	1,050	1	3
All Men	-690	-591***	-640	2	3
White Women	408	949	638	6	7
White Men	-576***	500	196	3	6
Minority Women	336	810	620	6	7
Minority Men	-758***	658	-30	2	7

\*With one exception, estimates in post-program year dollars.

\*\*Only estimates significant at the 0.5 level are included.

\*\*\*Participation restricted to young adults.

Table 11

**DECLINE IN AVERAGE ANNUAL OUTPUT GROWTH  
ATTRIBUTABLE TO ELIMINATION OF CETA PROGRAM\***  
(average annual growth in percent, 1982 to 1990)

ANNUAL POST-PROGRAM EARNINGS GAIN**	ANNUAL PROGRAM GRADUATES	
	<u>Positive Outcomes***</u>	<u>All Outcomes</u>
Public Service Employment \$909/participant \$1,660/participant	.002 .004	.006 .011
Work Experience \$154/participant \$1,400/participant	.000 .004	.001 .010
Classroom Training \$285/participant \$1,300/participant	.001 .006	.003 .013
On-The-Job Training \$991/participant \$2,055/participant	.001 .003	.003 .006
<b>Total</b>		
<b>Mean Estimate</b>	<b>.005</b>	<b>.012</b>
<b>Maximum Estimate</b>	<b>.017</b>	<b>.039</b>

\*The major adult training components of the CETA program (Titles II B, C and D).

\*\*The first earnings impact in each pair is the mean estimate while the second is the maximum.

\*\*\*Placement in unsubsidized employment.

Table 12

**EDUCATION: PUBLIC EXPENDITURES BY SOURCE\***  
 AS A SHARE OF GDP  
 (CALENDAR YEAR)

	<u>TOTAL PUBLIC EXPENDITURES</u>	<u>FEDERAL EXPENDITURES</u> -----			<u>STATE AND LOCAL EXPENDITURES**</u>
		<u>Subtotal FEDERAL</u>	<u>GRANTS</u>	<u>DIRECT</u>	
		<b>Ten-Year Averages</b>			
1952-60	3.14	0.18	0.07	0.11	2.96
1961-70	4.86	0.55	0.22	0.33	4.31
1971-80	5.97	0.79	0.31	0.48	5.18
1981-90	5.51	0.63	0.21	0.42	4.88
		<b>Five-Year Average</b>			
1971-75	6.12	0.83	0.34	0.49	5.29
1976-80	5.82	0.75	0.28	0.47	5.07
1981-85	5.48	0.66	0.22	0.44	4.82
1986-90	5.52	0.59	0.20	0.39	4.93

\*Includes veterans' education programs. Excludes Impact Aid.

\*\*Excludes spending financed by federal grants.

Sources: BEA, Table 3.16 and 3.17

Table 13

**PUBLIC ELEMENTARY AND SECONDARY EDUCATION:  
REAL EXPENDITURES PER PUPIL**  
(in 1989-90 dollars)

	<u>Current</u> <u>Expenditures/ADA*</u>	<u>Total</u> <u>Expenditures/ADA**</u>	<u>Average Daily</u> <u>Attendance</u> <u>(in thousands)</u>
1951-55	\$1,273.3	\$1,667.0	25,547.0
1956-60	1,509.3	1,956.0	29,979.7
1961-65	1,931.0	2,380.0	37,047.0
1966-70	2,446.3	2,916.0	40,638.7
1971-75	3,159.0	3,567.8	41,962.4
1976-80	3,629.2	4,008.8	39,909.0
1981-85	3,862.4	4,194.4	37,644.4
1986-90	4,677.6	5,157.8	37,436.6

**Short-Term Averages**

\*Average Daily Attendance.

\*\*Includes current expenditures, capital outlays, and interest.

Sources: U.S. Dept. of Education, Office of Educational Research and Improvement.

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